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## NOTES ON LINGUAL DENTITION OF CERTAIN SPECIES OF NORTH AMERICAN LAND SHELLS.

BY THOMAS BLAND AND W. G. BINNEY.

We are indebted to Miss Annie E. Law, of Jalapa, Tennessee, and to Mr. Henry Hemphill, of Oakland, California, for the specimens from which we extracted the jaws and lingual membranes here described.

## ZONITES LÆVIGATUS, Pf.

Jaw as usual in the genus.

## ZONITES INTERTEXTUS, Binney.

The jaw and lingual membrane are as usual in the genus.

## ZONITES DEMISSUS, Binney.

Jaw arched, ends attenuated, pointed; anterior surface smooth, cutting edge with well developed sharp median projection.

Lingual membrane as usual in the genus. Laterals above eight in number on either side of central line.

## ZONITES LASMODON, Phillips.

Jaw and lingual membrane as usual in the genus.

## ZONITES INTERNUS, Say.

The jaw and lingual membrane are those of *Zonites* (or *Hyalina*), and not of *Helix*, thus showing the generic position of the species, which is not so well marked by the shell.

The jaw is slightly arcuate, ends attenuated, pointed; median beak-like prominence to the cutting edge.

The lingual membrane is long and narrow. Central teeth large, with a long median cusp. Laterals like the centrals, but bifid, four in number, marginals aculeate.

## PATULA STRIGOSA, Gould.

Jaw long, low, slightly arcuate; anterior surface smooth excepting near the lower margin, where there are numerous, crowded, subobsolete ribs, or coarse striæ, crenellating the cutting edge. There is a very strong muscular attachment to the upper margin.

The lingual membrane is as usual in the genus. (See fig. 129 of L. and Fr. W. Shells, I.) The marginal teeth are wide and low, with one inner, long, obtuse, oblique denticle, and several short side blunt denticles, obtusely rounded.

PATULA COOPERI, W. G. Binn.

Lingual membrane as in *Patula strigosa*.

PATULA IDAHOENSIS, Newc.

The jaw very much resembles in form and in its crenellated cutting edge that of *Patula striatella*. (See fig. 141 of L. and Fr. W. Shells, part I.) Its anterior surface has coarse perpendicular striæ or obsolete wrinkles, not well formed ribs. There is a stout membranous attachment to the upper margin. Lingual membrane as in *Patula Hemphilli*. (See Am. Journ. of Conch., VI. 247.)

PATULA PERSPECTIVA, Say.

The jaw and lingual membrane are quite like those of *P. striatella*. The ends of the jaw, however, are more squarely truncated, and the striæ are not converging.

HELIX POLYGYRELLA, Bland.

Jaw slightly arcuate, ends but little attenuated, blunt; anterior surface with fifteen broad ribs, denticulating either margin.

Lingual membrane as in *H. auriculata*.

We are indebted to Mr. Harford for the living specimens from which the notes on this species are drawn.

HELIX PALLIATA, Say.

Jaw short, high; anterior surface with more than fifteen ribs, denticulating either margin.

HELIX OBSTRICTA, Say.

Jaw with ten ribs. Lingual membrane as in *H. palliata*.

HELIX DEVIA, Gld. var.

This small, doubtful form from Salmon River, Idaho, has the jaw arcuate, ends blunt, with about seven stout ribs denticulating either margin. The lingual membrane is broad, teeth as usual in the genus, the marginals low, wide, with one oblique, bluntly bifid, inner denticle, and several short, blunt, outer denticles.

HELIX FIDELIS, Gray.

In Amer. Journ. Conch., VI. p. 207, pl. ix. fig. 1, we described and figured the jaw as short, high, thick, rough, strongly arcuate, ends attenuated, blunt, cutting edge with a well developed, blunt, median projection, marked with decided longitudinal striæ, which crenellate its margin. We have lately had an opportunity of examining numerous other adult specimens, and find them decid-

edly costate, usually with about six ribs, denticulating either margin.

PALLIFERA DORSALIS, Binney.

An opportunity has lately been given us by Mr. H. Prime of examining living specimens from Westchester Co., New York. We find Mr. Morse's description and figure of the jaw to be quite correct, and have no doubt of the genus being distinct from *Tebennophorus*. The species appears to us well marked also, especially by the great activity of the animal's motions.

Mr. Prime noticed it climbing on trees, a habit often observed by us in several of our land shells. Thus *Helix thyroides* in the garden of one of us at Burlington, N. J., constantly climbs the fruit trees, to eat the gum which exudes from the branches.

Our figure 535, of L. and Fr. W. Shells, part I., is defective. The head does not extend beyond the mantle. See the upper figure in Terrestrial Mollusks, III., pl. lxiii.